



Archived at the Flinders Academic Commons:

<http://dspace.flinders.edu.au/dspace/>

This is the authors' version of an article published in *Australian Health Review*. The original publication is available by subscription at:

<http://www.publish.csiro.au/paper/AH11042.htm>

<http://dx.doi.org/10.1071/AH11042>

Please cite this article as:

Newman, L., Biedrzycki, K. and Baum, F., 2012. Digital technology use among disadvantaged Australians: implications for equitable consumer participation in digitally-mediated communication and information exchange with health services. *Australian Health Review*, 36(2), 125-129.

Copyright (2012) Australian Healthcare & Hospitals Association.

**Please note** that any alterations made during the publishing process may not appear in this version.

## **AUTHOR PRE-PRINT VERSION**

# **Digital technology use among disadvantaged Australians: Implications for equitable consumer participation in digitally-mediated communication and information exchange with health services**

**Published online May 2012 in *Australian Health Review*, 36: 125-129**

**<http://dx.doi.org/10.1071/AH11042>**

**Lareen A Newman** BA(Hons), PhD - corresponding author  
Senior Research Fellow, Southgate Institute for Health Society & Equity  
Level 2, Health Sciences Building, Flinders University, Bedford Park, SA 5042,  
Australia; Email: [lareen.newman@flinders.edu.au](mailto:lareen.newman@flinders.edu.au); Phone: +61 8 7221 8488.

**Kate R Biedrzycki** BSc, Grad Dip Int Health, MPH  
Research Officer, South Australian Community Health Research Unit  
Level 2, Health Sciences Building, Flinders University, Bedford Park, SA 5042,  
Australia.

**Fran E Baum** BA(Hons), PhD  
Professor and Director, Southgate Institute for Health Society & Equity  
Level 2, Health Sciences Building, Flinders University, Bedford Park, SA 5042,  
Australia.

## **Abstract**

**Objective:** To present research findings on access to, and use of, digital information and communication technologies (ICTs) by Australians from lower income and disadvantaged backgrounds to determine implications for equitable consumer access to digitally-mediated health services and information.

**Methods:** Focus groups were held in 2008- 2009 with 80 residents from lower income and disadvantaged backgrounds in South Australia, predominantly of working- and family-formation age (25 to 55). Qualitative analysis was conducted on a-priori and emergent themes to describe dominant categories.

## **Results:**

Access to, and use of, computers, the Internet and mobile phones varied considerably in extent, frequency and quality within and across groups due to differences in abilities, resources and lifecourse pathways. Barriers and facilitators included English literacy

(including for native speakers), technological literacy, education, income, housing situation, social connection, health status, employment status, and trust. Many people gained ICT skills by trial and error or help from friends, and only a few from formal programs, resulting in varied skills.

### **Conclusion:**

The considerable variation in ICT access and use within lower income and disadvantaged groups must be acknowledged and accommodated by health initiatives and services when delivering digitally-mediated consumer-provider interaction, online health information, or online self-management of health conditions. If services require consumers to participate in digitally-mediated communication exchange, then we suggest they might support skills and technology acquisition, and/or provide non-ICT alternatives, in order to avoid exacerbating health inequities.

### **1. What is known about the topic?**

Government and health provider use of digitally-mediated information and communication is rapidly increasing. However, national data show that ICT access is unevenly distributed across Australia's population. Furthermore, this distribution mirrors the health gradient. There is little qualitative data on the extent to which, and ways in which, ICTs are used within lower income and disadvantaged groups - those with greater health need.

### **2. What does this paper add?**

This paper augments the scant literature to describe ICT access and use in a range of lower income and disadvantaged groups. It indicates barriers and facilitators, and highlights the need for formal supports to level up the whole population to have the skills, confidence and resources to use and benefit from ICT-mediated communication.

### **3. What are the implications for practitioners?**

As health services and governments increase the level of digitally-mediated information and communication connection with consumers/patients, it is important to understand and find ways to address differential consumer access to and use of ICTs, so that equity of access to services and information is promoted. This is particularly important as lower income and disadvantaged groups are likely to have both poorer health and lower ICT use.

## Introduction

The ability to access information and communication technologies (ICTs), particularly via the Internet and mobile phones, is increasingly vital to full participation in economic, social, and political life.<sup>(1-4)</sup> This is particularly so as institutions move towards greater ICT-mediated provision of services, support and information.<sup>(5)</sup> There is also increasing focus on encouraging digitally-mediated consumer-to-provider and consumer-to-consumer connection in the health sector (within “e-health”), and more recently through “m-health” (via mobile devices, including mobile phones).<sup>(6)</sup>

The spread of ICTs hides the uneven distribution of digital access across Australia’s population, e.g. approximately 28% of households have no home Internet access,<sup>(7)</sup> although 82% of Australians aged 14 or older use, and 31% of children aged 5-14 own, a mobile phone.<sup>(8,9)</sup> Socio-economic factors influence these distributions. For example, only around 7% of households earning \$120,000 or more are without home Internet, whereas 42% of households earning less than \$40,000 are without.<sup>(7)</sup> Similar inequities are evident by geographic area.<sup>(10)</sup> However, connection data do not explain the extent to which ICTs are actually used and how this may in turn influence health.

Australia’s National E-Health Strategy intends to “transform the way health care professionals practice and consumers interact with the health system”, to “reduce costs and demands on the health system”.<sup>(11)</sup> The Strategy aims to “empower consumers” by encouraging “electronic access to the information needed to better manage and control their personal health outcomes”, and to focus on “those segments of the population that interact frequently with the health system.”<sup>(11)</sup> However, the Strategy does not acknowledge that those more likely to interact with the health system are those lower down the social gradient<sup>(12)</sup> with less means to use ICTs.

In Australia there is little qualitative research exploring digital access and use (or non-use) among lower socioeconomic status (SES) groups, or considering the implications for equitable consumer access to digitally-mediated health services. Much research on e-health is technically or provider-focused, with an overfocus on “new and exciting opportunities to empower individuals” (e.g. through electronic health records)<sup>(13,14)</sup> without explaining how benefits will result. Indeed, more critical approaches find potential for increased discrimination and inequality,<sup>(15)</sup> as digital inequalities are intertwined with other inequalities such as poverty and remoteness, and parallel the uneven distribution of chronic disease.<sup>(16, 17, 18)</sup> Furthermore, some assume that all consumers are abandoning traditional media channels<sup>(14)</sup> and that the Internet enables “unfettered access” to information for all.<sup>(19)</sup> However, the small amount of research on non-users finds those with lower education and income being least likely to have access, for example, to Internet-based medical information and support.<sup>(20, 21,22)</sup> The next sections outline our methods and findings on ICT use, perceived barriers and facilitators, and preferences for provider contact in lower income and disadvantaged groups in South Australia. This is followed by discussion of how policy and services can support more equitable access through e-health and m-health.

## Methods

Our study is a primary analysis of data from 80 individuals in nine focus groups. Between August and November 2008 six groups were held across Adelaide with 55 participants exploring ICT use, and in November 2009 three groups were held with 30 participants about Internet access via-mobile phones. Focus groups are valuable for research with lower SES or 'vulnerable' populations because they give 'voice' to the participants, allowing them to define what is important to understand their experiences <sup>(23)</sup>. Local service workers provided recruitment assistance in lower SES areas (as per <sup>(10, 24)</sup>). Participants were aged 25 to 55 years and recruited from: a women's support group; two men's support groups; an employment support group; a community housing group; an Aboriginal students group; and an African recent-refugee group. Research approval was obtained from the Flinders University Social & Behavioural Research Ethics Committee.

A semi-structured discussion schedule was developed based on a literature review and previous surveys <sup>(1, 25, 26)</sup> and allowed participants to raise additional issues. All but six participants also agreed to complete a short survey with demographic and technological information. Questions relevant to this paper were on ICTs being used or not; description of use; ways of learning; perceived facilitators and barriers; and preferred contact methods with service providers. Assistance was offered to participants to read project information and forms, and the refugee group used translated documents and an interpreter. Discussions were recorded and transcribed. Participants were thanked with lunch and a \$30 voucher.

Transcripts were analysed according to established methods to provide a descriptive account. <sup>(27, 28)</sup> LN and KB conducted all groups, which allowed continual data immersion; they then used a constant comparative, iterative method to analyse two transcripts, individually allocated text to a-priori and emergent codes, and compared and discussed interpretations to derive a coding framework. This framework was applied to the other transcripts and new emergent codes were discussed and added. As analysis proceeded with subsequent groups, new questions were incorporated into the schedule to further explore emerging ideas. The final framework consisted of dominant categories.

## Results

### *Socioeconomic and demographic profile of participants*

The survey confirmed that participants represented lower SES and disadvantaged groups: three-quarters had household incomes equal to or less than average; two-thirds were living with some perceived financial strain; two-fifths were educated to year 11 or less; most were in lower level occupations; one in ten were unemployed; almost all resided in lower SES areas; three-quarters lived in rental housing; over one quarter were Aboriginal; one in ten were sole parents; and two-fifths spoke a language other than English at home.

### *ICT access and use*

Access to, and use of ICTs – computers, Internet, mobile phones – varied considerably in extent, frequency and quality, as did perceived effectiveness: *“I do have a computer at home but it sits in the bedroom collecting dust. I’ve got the Internet on but I never use it”; “My computer I am on 90% of the time. I use it for anything from Internet banking; we purchase things worldwide from various websites, check the weather, my TV guide”; “Don’t have anything to do with the Internet. I don’t have a lot of technology stuff”.*

People often found mobile phones cheaper to buy and maintain, and easier to use, than PC, although a few shared mobiles (e.g. with a partner), and one third had no landline home phone. While some had no Internet use, others mentioned a range of access opportunities, including home, work, college, or community locations: *“I’ve had Dial-Up for years now and I’m just used to it. If I need something faster I go here [common room in community housing] or to [homeless women’s centre]”.*

Nevertheless, those with home or community access did not necessarily get time to use this, have skills to use it well, or choose to use it all the time. Many could not afford Internet access at home or on their mobile phone, yet public access varied in usefulness and availability: *“I’ve got another 18 months to go of [home] Broadband, then I think I’ll start using the library. Costs, yes”; “The library is good because it’s got free Internet, but some people go there every day [and] they’ve booked it up [so] that you have trouble getting time”; “At [disability support centre] I’d feel like... people would be watching me”.* Furthermore, women with young children found public computers hard to use without a crèche, while one single dad needed home access to search for work once his daughter was asleep at night.

There were also across-group differences in ICT use. For example, younger Aboriginal participants described difficulties with intergenerational communication as grandparents would not answer calls from mobile phones, which was the younger people’s preferred communication method. The refugee group was the only group to discuss high costs using phone cards to call overseas; they also criticised Australian government websites (e.g. Immigration) for not clearly providing non-English language options, and used the Internet to access news about Australia from non-Australian sources. Some older participants appeared to have greater difficulty with technological literacy and manual dexterity, but some participants in their 20s also had barriers to use (eg affordability), with one young woman still using her local payphone.

### *How people learned to use technologies*

Most technology use was self-taught or via friends, so that those with few social connections were at a distinct disadvantage. A smaller number gained skills through school or workplaces. Others reported reluctance to learn, were fearful of technology, or felt appropriate training (i.e. respectful, non-judgmental, one-on-one needs-based training at familiar places) was unavailable. Basic skills such as mobile texting and Internet searching were difficult or off-putting, including for some younger people. Therefore, lack of confidence, skills or resources often restricted use and limited the benefit people derived: *“I have a mobile but I only know how to answer it. Going into and sending messages, I wouldn’t have a clue”.*

### *Perceived facilitators and barriers*

Digital access and use were strongly influenced by:

1. Resources: including whether people had stable housing to have an Internet connection, income, social context and networks, family situation, education and employment histories.
2. Individual attributes: including trust, confidence, perceived needs, and technological and English literacy skills (including for native English speakers): *“Business people would want it [Broadband on their mobile] but to the average peasant like myself it’s just no use”; “I have a problem with the reading and writing side of it... With the Internet if you can’t damn well read the words, how are you supposed to access the Internet in the first place?”.*
3. Health status or health conditions: also influenced use. Poor manual dexterity among older participants limited use of small buttons on mobile phones, while one man was choosing between the costs of maintaining home Broadband or a private car (since his back injury prevented public transport use). Health conditions were sometimes the impetus to learn Internet searching: *“GPs don’t know everything and they don’t want to tell you that they don’t know everything... so [on the Internet] you can do your own research”.*
4. Structures and systems: established by telecommunications companies which were deemed accessible and trustworthy, or otherwise: *“I reckon the [mobile] plans are ridiculous anyway, because they tell you you’re paying \$29 a month but it’s not true – you’re paying \$200 or something”; “I tried to [use Internet on phone] and I was quite upset because I’m on [network] and they don’t let you use the Internet when you’re on prepaid... so I’m disadvantaged because I won’t go onto [can’t afford] a plan.”*

### *Preferred service contact*

In light of barriers to use, participants varied in their willingness to have digitally-mediated contact with services. Some liked electronic contact for straightforward transactions but wanted personal contact for complex queries: *“You can just jump online for Centrelink and find out how much your next pay is”; “I don’t have my [driving] licence so it’s better for me to [do banking] over the phone”; “I applied for TAFE just a couple of weeks ago through the Internet”.* However, for a good proportion only traditional contact was effective: *“I prefer to ring up because they explain it to me better than what is written on the Net”; “Sometimes you’ve got a question, which in a pile of writing you’ve got to search (for). But if you ask a question with someone face-to-face - there’s your answer”.* The move to electronic contact was interpreted by some as cost-shifting to the consumer rather improving services, while those without the resources or desire to change also felt that direction to increased digital contact (eg “Visit our website”) caused stigmatisation and stress: *“[It implies] you should be connected - you’re no one if you aren’t”.* However, Internet or mobile contact from service providers (e.g. text reminders for appointments) was welcomed by customers who gave authorisation.

## Discussion

While digital technology use is increasing rapidly across Australia, this is not occurring equally across the population. This has implications for equitable access to health services and information. Among our research participants some did not use ICTs, and those that did varied in their quality, type and frequency of use. Our findings suggest that initiatives which increase digital contact with or between consumers, on the assumption of improved service efficiency and effectiveness, should assess whether the whole consumer population has the resources and skills to benefit from such contact, and then provide resources and training to fill identified gaps. That is, using Dahlgren and Whitehead's term,<sup>29</sup> to "level-up" less privileged groups across the social gradient

Despite the almost universal ownership of mobile phones, many in our study perceived they had insufficient income to make mobile calls, limiting mobiles as a reliable communication option. For example, until 1800 numbers become free from mobile phones, services could consider how to support mobile freecalling such that a 1800 Smoking Quitline, for example, is affordable for the mobile-only population.<sup>30</sup> Otherwise, such strategies will disproportionately affect lower SES groups, who are more likely to smoke. As a positive example, South Australia's Royal District Nursing Service established and paid for videophones and Broadband connections to introduce virtual nurse visiting in clients' homes, which saved resources compared with personal visits.<sup>31</sup>

While there is a national focus on digital up-skilling for particular sub-groups (e.g. Aboriginal, older, CALD, remote Australians), there seems less focus on the mainstream lower income working age population whose levels of literacy, trust and confidence may also be low. We therefore suggest services consider the communication needs of their whole population. Researchers could further explore consumer needs in mainstream and sub-groups to identify the best ways to fill "communication gaps". Australia could also learn from developing countries, where high illiteracy rates make obvious the need to combine digital and traditional communication media in order to avoid excluding certain groups.<sup>32</sup> Our research suggests all services incorporating e- or m-health initiatives should compare the role, meaning and effectiveness of digital and traditional communication for their consumers. Since health issues were a motivation for some participants to start ICT use, service providers could leverage this opportunity for consumer up-skilling.

Our findings also suggest that services should be aware that pressuring unprepared or unwilling consumers to use ICTs can further undermine health by creating stigma, distrust and feelings of losing control. A reasonable conclusion in this context is that "encouraging consumers to use electronic access"<sup>(11)</sup> could not only undermine health in lower SES groups, but that encouragement (or coercion) into digital communication may cause them to opt out of services, putting their health in further jeopardy.



## Conclusion

Our study findings augment the scant literature to provide insight into the implications of increased ICT-mediated health services for disadvantaged groups. While qualitative findings from non-random selected groups are not generalisable, this limitation was partly addressed by our participants having broadly representative characteristics of the more disadvantaged in the Australian population. Our study suggests that ICT mediated health initiatives should be considered in more complex and diverse ways to ensure that health inequities are not exacerbated by digitally-mediated communication methods excluding those who lack skills, resources or capabilities to use ICTs. Unless lower SES groups receive appropriate support (e.g. skills training, funded equipment), ICT mediated communication may become a new barrier to health service access. Consumers should be included in communication planning, rather than taking a “one-size-fits-all” approach, and further research on the topic is indicated. Without such compensatory measures Australia’s E-Health Strategy may end up increasing inequities in health service access.

## References

1. Lee L, Markotsis D, Weir T. Social impacts of the new economy. Canberra: Department of Industry, Tourism & Resources, 2002.
2. Kvasny L, Kranich N, Schement J. Communities, learning and democracy in the digital age. *The Journal of Community Informatics [online]* 2006; 2(2).
3. US Department of Commerce. A nation online: Entering the broadband age. National Telecommunications & Information Administration Economics & Statistics Administration; 2004. Available at: <http://www.ntia.doc.gov/reports/anol/NationOnlineBroadband04.pdf> (accessed Dec 2010).
4. Vinson T. Dropping off the edge: the distribution of disadvantage in Australia. Sydney: Jesuit Social Services and Catholic Social Services Australia, 2007.
5. Government of South Australia. South Australian Government ICT Strategy – Ask Just Once. Adelaide: Office of the Chief Information Officer, 2008.
6. Australian Government Information Management Office. Australians’ use of and satisfaction with e-government services. Department of Finance and Deregulation. Canberra: Commonwealth of Australia; 2007.
7. Australian Bureau of Statistics. Household use of information technology, Australia, 2008-09. Canberra: Commonwealth of Australia, 2009. (ABS Cat. No. 8146.0).
8. Department of Broadband Communications & the Digital Economy. Online statistics. 2008. Available at: [http://www.archive.dbcde.gov.au/2008/01/statistical\\_benchmarking/online\\_statistics](http://www.archive.dbcde.gov.au/2008/01/statistical_benchmarking/online_statistics) (accessed 16 April 2010).
9. Australian Bureau of Statistics. Children's participation in cultural and leisure activities, Australia. Canberra: Commonwealth of Australia, 2009. (ABS Cat. No. 4901.0).

10. Glover J, Hetzel D, Glover L, Tennant S, Page A. A social health atlas of South Australia. 3rd ed. Adelaide: Public Health Information Development Unit, University of Adelaide, 2006.
11. Australian Health Ministers Conference. National e-health strategy: Summary. Victoria, 2008. Available at <http://www.ahmac.gov.au> (accessed September 2010).
12. Tudor Hart J. The inverse care law. *Lancet* 1971; i: 405-12.
13. Crilly JF, Keefe RH, Volpe F. Use of electronic technologies to promote community and personal health for individuals unconnected to health care systems. *Am J Public Health* 2011; 101:1163-1167.
14. Duffy ME, Thorsen E. Emerging trends in the new media landscape. In: Parker JC, Thorson E, editors. Health communication in the new media landscape. New York: Springer Publishing Company; 2009. pp. 93-116.
15. Greenhalgh T, Wood GW, Bratan T, Stramer K, Hinder S. Patients' attitudes to the summary care record and HealthSpace: qualitative study. *BMJ* 2008; 336 : 1290, doi: 10.1136/bmj.a114.
16. Gilbert MR, Masucci M, Homko C, Bove A. Theorizing the digital divide: Information and communication technology use frameworks among poor women using a telemedicine system. *Geoforum* 2008; 39(2): 912-925.
17. Kvasny L, Keil M. The challenges of redressing the digital divide: A tale of two U.S. cities. *Information Systems Journal* 2006; 16(1): 23-53.
18. Han JH, Sunderland N, Kendall E, Gudes O, Henniker G. Professional practice and innovation: Chronic disease, geographic location and socioeconomic disadvantage as obstacles to equitable access to e-health. *Health Information Management Journal* 2010; 39(2): 30-36.
19. Hesse BW. Enhancing consumer involvement in health care. In: Parker JC, Thorson E, editors. Health communication in the new media landscape. New York: Springer Publishing Company; 2009. pp. 119-150.
20. Diaz JA, Griffith RA, Ng JJ, Reinert SE, Friedmann PD, Moulton AW. Patients' use of the internet for medical information. *J Gen Intern Med* 2002; 17(3):180-5.
21. Fogel J, Albert SM, Schnabel F, Ditkoff BA, Neugut AI. Internet use and social support in women with breast cancer. *Health Psychol* 2002; 21(4): 398-404.
22. O'Mara B, Babacan H, Borand H. Sending the right message: ICT access and use for communicating messages of health and wellbeing to CALD communities. Footscray Park, Victoria: Institute for Community, Ethnicity & Policy Alternatives, Victoria University; 2010.
23. Liamputtong P. Researching the vulnerable. London: Sage Publications; 2007.
24. Australian Bureau of Statistics. Adelaide: A social atlas - 2001 census of population & housing. Canberra: Commonwealth of Australia, 2002. (ABS Cat. No. 2030.4).
25. Australian Communications & Media Authority. Telecommunications today: consumer attitudes to take-up and use. Belconnen ACT: Commonwealth of Australia, 2007.
26. Blanchard M, Metcalf AB. Bridging the digital divide: Creating opportunities for marginalised young people to get connected. Sydney: Inspire Foundation and ORYGEN Youth Health, 2007.

27. Green J, Willis K, Hughes E, Small R, Welch N, Gibbs L, Daly J. Generating best evidence from qualitative research: the role of data analysis. *ANZ J Public Health* 2007; 31(6): 545-550.
28. Ritchie J & Spencer L. Qualitative data analysis for applied policy research. In: Bryman A, Burgess R, editors. *Analysing qualitative data*. London: Routledge; 1993 pp. 173-194.
29. Dahlgren G, Whitehead M. Levelling up (part 2): a discussion paper on European strategies for tackling social inequities in health. Copenhagen: WHO Regional Office for Europe; 2006.
30. Newman L (in press), 'Telephone survey methods: Implications of the mobile-only population for public health research', *Australian & New Zealand Journal of Public Health*.
31. Wade V, Izzo J, Hamlyn J. Videophone delivery of medication management in community nursing. *Electronic Journal of Health Informatics* 2009; 4(1). Available at <http://www.ejhi.net/ojs/index.php/ejhi/article/view/90> (accessed 2 February 2010).
32. Haider M, Ratzan S, Meltzer W. International innovations in health communication. In: Parker JC, Thorson E, editors. *Health communication in the new media landscape*. New York: Springer Publishing Company; 2009. pp. 373-395.

### **Conflicts of interest**

The authors disclose that they have no financial or personal relationships with organisations that could inappropriately influence their work, nor do they have any financial or other support which may pose a competing interest. The sources providing funding have agreed to the publication of this material, but had no influence over the way in which the data in this paper was analysed, interpreted or presented. Dr Newman discloses that she is an unremunerated member of the Australian Communications Consumer Action Network (ACCAN).